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EXPLANATION OF PLATE XXVIII.

Phyllium crurifolium.

The figures represent the adult male and female of the natural size, and were photographed from living examples.

1. Female imago.
2. Male imago.

2. The Mammals of Matabeleland. By E. C. CHUBB, F.Z.S.,
Acting Curator of the Rhodesia Museum.

[Received December 29, 1908.]

The Rhodesia Museum has acquired during the past two years sufficient material to give a good idea of the mammalian fauna of the Western Province of Southern Rhodesia, and it is upon this collection that the present paper is based. For the sake of completeness, however, I have included the mounted examples of big game that were in the Museum prior to this period, and also a few species known to occur in the country, though up to the present unrepresented in the Museum.

The only previous paper dealing with the mammals of this area is that of De Winton*, being a list of a collection made by Selous at Essexvale. The species therein recorded are also incorporated in this list.

Two interesting Bats, *Rhinolophus empusa* and *Cleotis percivali*, are now recorded for the first time from South Africa south of the Zambezi, hitherto being known only from the type localities, Nyasaland and British East Africa respectively.

The probability of the different geological formations supporting distinct vertebrate faunas was pointed out to me some time ago by my former colleague, Mr. F. P. Mennell, and indeed this seems to be borne out in a remarkable way by at least one group among

* P. Z. S. 1896, p. 798.

the mammals, viz. the Elephant-Shrews, one of which, *Elephantulus rupestris myurus*, occurs wherever there is an outcrop of granite, while the other, *Nasilio brachyrhynchus*, is found only on the schists. Although separated generically on dental characters, these two shrews are very closely allied in other respects and are of very similar habits. They are never found living together, however, for whereas the latter is common at Bulawayo on the schist, yet on the granite only two miles west of the town, and also at Helenvale about 15 miles north, and the Matopos some 40 miles south, it is replaced by *Elephantulus rupestris myurus*.

As a general rule the mammals here get their new annual coats at the beginning of the rainy season, about October or November, and the contrast between the old faded coat and the new one is very marked in jackals killed in, say, August and November.

The country slopes down from a line running north-east through Bulawayo, at an altitude of about 4500 feet above the sea, to the Zambezi and Limpopo Rivers on either side, which are about 2000 feet and 1500 feet respectively.

I must express my indebtedness to Mr. Oldfield Thomas, Dr. Knud Andersen, and Mr. R. C. Wroughton, who have been good enough to compare and identify a number of specimens for me.

The native names are those of the Matabele, an offshoot of the great Zulu nation, who trekked up from the south about seventy years ago. The letters "c" and "q" in these names represent clicks. "c" is made by pressing the tongue against the front upper teeth and quickly withdrawing it, as *isance*. It is much the same sound as the expression of vexation "tut." "q" is made by curling the tip of the tongue upwards against the roof of the mouth and quickly withdrawing it, as *iqaga*. This click sounds like the "pop" of a cork when extracted from a bottle.

1. CERCOPITHECUS PYGERYTHRUS Cuv.

There are two flat skins, without skulls, of this Monkey in the collection. One was obtained near Inyati and the other in the Matopo Hills, where the species is fairly common.

Native name: *Inkau*.

2. PAPIO sp.

♂. 17 Oct., 1907. Matopos.

♀. 6 Sept., 1907. "

Native names: *Indwangu* and *Imfene*.

3. GALAGO MOSSAMBICUS Pet.

♂. 9 May, 1908. Bulawayo.

♂. 3 Aug., 1908. "

♂. 19 March, 1908. Gambo's, Manzamnyama River.

Nocturnal. It lives in a thorn-tree (*Acacia horrida*), and sleeps during the day in the hollow trunk or in a roughly

constructed nest of grass and twigs in a fork among the branches. Its food consists chiefly of insects, which it catches with its hands, but the gum of the tree on which it lives is also relished. This it takes in its hands and licks.

Its eyes are a rich dark red or mahogany colour, with a round pupil.

Native names: *Ugwindu* and *Umpugunyoni*.

4. RHINOLOPHUS DARLINGI K. And.

♂ ♀. Mazeppa Mine, Gwanda. In al.

Native name for all Bats: *Uluwane*.

5. RHINOLOPHUS AUGUR ZAMBESIENSIS K. And.

♂ ♀ ♀. 5 April, 1907. Bulawayo.

♂ ♀ ♀. 9 April, 1908. „

3 ♂, ♀. Mazeppa Mine, Gwanda. In al.

Lives in caves in granite kopjes and also in mines.

6. RHINOLOPHUS EMPUSA K. And.

♂. Mazeppa Mine, Gwanda. In al.

This is interesting as being the second known individual example of the species, and also the first record of its occurrence south of the Zambezi. It was described on a specimen from Zomba, Nyasaland*.

7. RHINOLOPHUS HILDEBRANDTI Pet.

♂ ♀. 22 Sept., 1907. Malute Reef, Pandangwe, Gwanda.

4 ♂, 5 ♀. Mazeppa Mine, Gwanda. In al.

Lives in mines.

8. HIPPOSIDERUS CAFFER Sund.

♀. 12 Oct., 1907. Mazeppa Mine, Gwanda.

2 ♂, 4 ♀. Mazeppa Mine, Gwanda. In al.

9. CLÆOTIS PERCIVALI Thos.

♀ imm. Mazeppa Mine, Gwanda. In al.

♂, 2 ♀. 18 Aug., 1908. Mazeppa Mine, Gwanda. In al.

10. NYCTERIS CAPENSIS Smith.

♂. 12 June, 1907. Bulawayo.

♂, 3 ♀. 15 June, 1907. Bulawayo.

♂, 5 ♀. Sept. 1907. Mazeppa Mine, Gwanda. In al.

Four out of the five females in alcohol are pregnant.

11. VESPERTILIO MINUTUS Temm.

♂. 25 June, 1908. Bulawayo.

♂. 5 July, 1908. „

3 ♂, 3 ♀. July, 1908. Bulawayo. In al.

* Ann. Mag. N. H. (7) xiv. p. 378, 1904.

This Bat makes its appearance just after sunset. It flies rather low, and frequents in considerable numbers the neighbourhood of cowsheds for the insects which abound over manure-heaps.

12. *SCOTOPHILUS NIGRITA* Schreb.

♂. 5 June, 1908. Bulawayo.

13. *MINIOPTERUS SCHREIBERSI* Natt.

♂. 1 March, 1907. Bulawayo. In al.

♀. 26 Aug., 1907. „

♀. 17 Aug., 1907. Gravesend Farm, Bembezi River.

This species often flies into houses in the evening.

14. *ELEPHANTULUS RUPESTRIS MYURUS* Thos. & Schw.

♀. 24 Sept., 1907. Syringa.

2 ♂, ♀. 20 April, 1908. Mt. Silozi, Matopos, 4400 ft.

♀. 7 May, 1908. Near Bulawayo.

June, 1908. Helenvale Farm, near Bulawayo. (In alcohol.)

Diurnal. It lives under boulders on granite kopjes or among the heaps of large stones which frequently occur on the granite formation. Its food consists of various kinds of insects—the stomach of one that I found was full of leaf-cutting ants.

Though shy, venturing only with great caution away from its retreat, and returning at the slightest approach of danger, it is also inquisitive, and will sit under the ledge of a rock eyeing one with curiosity and apparent unconcern for its safety.

Average measurements, taken in the flesh, of the three Silozi examples:—Head and body 121 mm.; tail 133; hind foot 35; ear 31; proboscis 14.

Native name: *Utswebe ulukulu*.

15. *NASILIO BRACHYRHYNCHUS* Smith.

♂. 6 Sept., 1907. Bulawayo.

♀. 5 Sept., 1907. „

♀. 31 July, 1908. „

This species appears to be confined to the schist formation, and its colour harmonizes well with the red soil. Like the former species, it lives among heaps of stones. The example killed on 5th September contained one well-developed fetus. Two were shot, while the third was caught in a trap baited with fish.

Average measurements, taken in the flesh, of the three specimens:—Head and body 108 mm.; tail 104; hind foot 29; ear 20.

Native name: *Utswebe ulukulu*.

16. *CROCIDURA* sp.

♀. 20 June, 1908. Bulawayo.

2. Bulawayo. In al.

Native name: *Utswebe*.

17. FELIS LEO Linn.

♂. 9 Oct., 1907. Near Eagle Vulture Mine, Gwanda.
The Lion is frequently met with in various parts of the country.
Native names: *Isilwane*, *Impamvu*, *Ingwoyama*.

18. FELIS PARDUS Linn.

The Leopard is by no means uncommon in many parts of the country. It lives in the Matopo Hills, and I know of a number having been killed recently at Belingwe.

Native name: *Ingwe*.

19. FELIS SERVAL Erxl.

Kahlele's, Matopos.
June, 1908. Gwaai River.
Native name: *Indhlozi*.

20. FELIS OCREATA Gmel.

♂. 1 Oct., 1907. Near Bulawayo.
Native name: *Igola*.

21. FELIS CARACAL Güld.

18 June, 1906. Near Bulawayo.
Native name: *Intwane*.

22. CYNÆLURUS JUBATUS Erxl.

The Cheetah is occasionally killed in the country, and I know of one which was shot recently at Essexvale.
Native name: *Ihlozi*.

23. VIVERRA CIVETTA Linn.

♀. June 1907. Kahlele's, nr. Mt. Silozi, Matopos.
Native name: *Isimbaluti*.

24. GENETTA LUDIA Thos. & Schw.

16 March, 1908. Bembezi Diamond Fields.
♂. 25 Sept., 1908. Bulawayo.
Native name: *Insimba*.

25. GENETTA RUBIGINOSA Puch.

♀. Kahlele's, Matopos.
Native name: *Insimba*.

26. MUNGOS CAFER Gmel.

A skin without skull; killed at Wankies in September 1908.
Native name: *Uwobo*.

27. MUNGOS CAUVI Smith.

♂. 1 July, 1907. Inyamandhlovu.
♀. 17 July, 1907. Bulawayo.

♂. 19 July, 1907. Bulawayo.

♂. 19 Sept., 1907. Syringa.

♂. 23 Sept., 1907. ,,

Diurnal and common. It may be seen crossing roads or foot-paths at all times during the day.

Native names: *Ubucakidi* and *Uwobo*.

28. MUNGOS ALBICAUDA Cuv.

♂. 4 Sept., 1908. Syringa.

This specimen has a black tail, as is often the case in this species. Said to live in kopjes and to feed on rats and mice. Iris grey.

Native name: *Iduhwa elimnyama*.

29. HELOGALE PARVULA, Sund.

♂ ♀. 28 Oct., 1907. Near Bulawayo.

May 1907. Lukozi River, Wankies Dist.

Diurnal. It lives in colonies among the boulders of granite kopjes, and feeds on insects.

Native name: *Ubutwetwetwe*.

30. CYNICTIS SELOUSI de Wint.

♀. 23 May, 1907. Bulawayo.

♀. 21 June, 1907. ,,

♀. 11 July, 1907. ,,

♂. 1 July, 1907. Inyamandhiovu.

♀. 5 Aug., 1907. Bulawayo.

♀. 8 Aug., 1907. ,,

♂. 13 Aug., 1907. ,,

♀. 27 June, 1908. Near Bulawayo.

Nocturnal and common. It lives in holes in the ground, and feeds on small mammals and birds.

Native name: *Iduhwa*.

31. PROTELES CRISTATUS Sparrm.

A native skin from 16 miles south of Bulawayo.

Native name: *Isance*.

32. HYÆNA CROCUTA Erxl.

♂. June 1908. Gwaai River.

Not uncommon in the forest-belts, known as "gusos," where its white chalky droppings are often seen.

Native name: *Impisi*.

33. CANIS MESOMELAS Ehrenb.

♀ imm. 15 Jan., 1908. Bulawayo.

Common, chiefly nocturnal.

Native name: *Ikanka*.

34. *CANIS ADUSTUS* Sund.

♂. 15 Nov., 1907. Kana River.

Native name: *Igowa*.35. *OTOCYON MEGALOTIS* Desm.

A head-skin of this species from near Wankies is in the collection.

36. *LYCAON PICTUS* Temm.

♀. 1 Sept., 1907. Sebakwe.

Antelope Mine, S. of Matopos (skull only).

Native name: *Iganyana*.37. *AONYX CAPENSIS* Schinz.

1 Dec., 1907. Belingwe.

Native name: *Intini*.38. *MELLIVORA RATEL* Sparrm.

Belingwe.

Native name: *Umantswane* and *Ulinda*.39. *ICTONYX CAPENSIS* Kaup.

3 April, 1907. Bulawayo.

♂ ♀ imm. 8 Nov., 1907. Bulawayo.

♂. 22 May, 1908. Bulawayo.

♂. 16 July, 1908. Near Bulawayo.

Nocturnal, and not uncommon.

Native name: *Iqaga*.40. *FUNISCIURUS CEPAPI* Smith.

♂. Sept., 1907. Siringa.

♂. 14 Oct., 1907. Bulawayo.

♂. 1 Dec., 1907. Tokwe River.

♂ ♂ ♀ ♀. 19 April, 1908. Mt. Selози, Matopos.

This Squirrel has two very different habitats. It lives on granite kopjes and also in the forests of mopane (*Copaifera mopane*).

Native names: *Ubuhlula*, *Isikale*, and *Uwobo*.41. *GRAPHIURUS PLATYOPS* Thos.

♂. 17 Oct., 1907. Siringa.

♂. 21 Oct., 1907. „

42. *GRAPHIURUS GRISELDA* Schwann.

♀. 1 April, 1908. Bulawayo.

♀. 16 Sept., 1908. „

43. TATERA LOBENGULE de Wint.

Gerbillus leucogaster de Wint. P. Z. S. 1896, p. 806.

♂. 10 June, 1907. Springvale Farm.

♀ ♀. 11 Sept., 1907. Bulawayo.

♂. 23 Sept., 1907. Buck's Reef, Gwanda.

♀. 23 Oct., 1907. Khami River.

♀. 16 Nov., 1907. Kana River.

♀. 23 Nov., 1907. Swena's, Gwamayaya River.

Essexvale (*Selous*).

Mammary formula: 2—2 = 8.

Lives in holes in the ground, and is partially diurnal.

Native name: *Imbeba*.

44. OTOMYS IRRORATUS AURATUS Wr.

♂. 10 June, 1907. Springvale Farm.

Native name for all Rats: *Igundwane*.

45. DENDROMUS MESOMELAS Brants.

♂. 24 May, 1908. Helenvale Farm, near Bulawayo.

Caught in the nest, which was formed of woven grass-blades and suspended among tall grass about 4 ft. 6 in. from the ground. It appears to be very like the English Harvest-mouse in habits.

46. MUS NIGRICAUDA Thos.

♀. 27 April, 1907. Bulawayo.

♀. 7 Oct., 1907. „

♀. 28 May, 1908. „

Crepuscular, nocturnal, and strictly arboreal. It lives in the common thorn-tree (*Acacia horrida*) and feeds upon the gum which exudes from it. The first example was taken alive with four young from a tree that was being cut down.

Mammary formula: 1—2 = 6.

47. MUS RATTUS Linn.

Essexvale (*Selous*).

Very common in houses near Bulawayo.

48. MUS CHRYSOPHILUS de Wint.

♂. 6 April, 1907. Bulawayo.

♂. 12 Oct., 1907. „

♂. 10 June, 1907. Springvale Farm.

♂. 16 Sept., 1907. Siringa.

♀. 22 Sept., 1907. Pandangwe Kopjes, Gwanda.

♂ ♀. 12 Nov., 1907. Indabambi's, Shangani River.

♂ ♀. 24 May, 1908. Helenvale Farm.

Essexvale (*Selous*).

Mammary formula 1—2 = 6. This is our commonest rat. On rough granite country and kopjes it takes grass into the crevices between rocks to form nests. It occasionally enters houses.

49. *MUS AURICOMIS* de Wint.

P. Z. S. 1896, p. 807.

Essexvale (*Selous*).50. *MUS COLONUS* Brants.

3 ♂, ♀. 10 June, 1907. Springvale Farm.

♂. 4 Sept., 1907. Bulawayo.

♂. 18 Sept., 1907. "

♀. 9 Nov., 1907. Shangari River.

♀. 12 Nov., 1907. Indabambi's, Shangani River.

Very common, and enters houses.

51. *MUS MICRODON* Pet.

♀. 16 March, 1907. Bulawayo.

♂. 14 Feb., 1908. "

♀. 8 April, 1908. "

♂. 3 May, 1908. "

♂. 20 April, 1908. Kahlele's, Matopos.

♂. 25 May, 1908. Helenvale Farm.

This like *Mus colonus* often enters houses.52. *MUS MUSCULUS* Linn.

♀. 24 March, 1907. Bulawayo.

Very common.

53. *LEGGADA MINUTOIDES* Smith.

♂. 7 Nov., 1907. Tjokos', Shangani River.

54. *SACCOSTOMUS HILDE* Schwann.

25 Oct., 1907. Khami River,

♂. 7 Feb., 1908. Near Bulawayo.

This species has only been found on the granite formation.

55. *ACOMYS SELOUSI* de Wint.

P. Z. S. 1896, p. 807.

Essexvale (*Selous*).56. *ARVICANTHIS PUMILIO DILECTUS* de Wint.

♂ ♀. 10 June, 1907. Springvale Farm.

57. *ARVICANTHIS DORSALIS* Smith.

♂. 4 Sept., 1907. Bulawayo.

♂. 5 Sept., 1907. "

♀. 18 Sept., 1907. "

♂. 21 Sept., 1907. Buck's Reef, Gwanda.

♂. 18 Oct., 1907. Bulawayo.

Diurnal.

58. GEORYCHUS NIMRODI de Wint.

P. Z. S. 1895, p. 808.

Essexvale (*Selous*).

59. PEDETES CAFER Pall.

♂. 13 June, 1907. Colleen Bawn Mine, Gwanda.

♂. 18 Jan., 1908. Bulawayo.

♀. 14 Oct., 1908. Bulawayo.

Native name: *Myelane*.

60. THRYONOMYS SWINDERIANUS Temm.

♀. 16 Sept., 1907. Bulawayo.

♂ yg. 1 Aug., 1908. "

♂. 9 Oct., 1907. Springvale Farm.

Mammary formula 2—1=6.

Native name: *Ivondo*.

61. HYSTRIX sp.

The Porcupine occurs in the country, but I have not succeeded in obtaining an example of it yet.

Native name: *Inungu*.

62. LEPUS ZULUENSIS MICKLEMI Chubb.

♂. 13 April, 1907. Bulawayo.

♂. 15 April, 1907. "

2 ♀. 4 May, 1907. "

♂. 13 July, 1907. "

♂. 27 April, 1908. "

♂. 2 May, 1908. "

♀. 4 August, 1908. "

1 July, 1907. Nyamandhlovu.

Very common.

Native name: *Umvundhla*.

63. PRONOLAGUS RUDDI RANDENSIS Jameson.

Syringa.

Confined to granite kopjes.

Native name: *Ineteletja*.

64. DAMALISCUS LUNATUS Burch.

♂ ♀. Near Mangwe.

Native name: *Inkolome*.

65. CONNOCHETES TAURINUS Burch.

♂ ♀. Near Mangwe.

Native name: *Inkonkoni*.

66. CEPHALOPHUS GRIMMI Linn.

♀. Near Mangwe.

♂. 9 July, 1907. Insiza.

3 ♂, 2 ♀. 24 Oct., 1907. Mt. Silozi, Matopos.

♂. Inyati (*albino*).

Native name : *Impunze*.

67. OREOTRAGUS OREOTRAGUS Zimm.

♂, ♀, yg. Near Mangwe.

♂ yg., ♀. 24 Oct., 1908. Mt. Silozi, Matopos.

♀. 17 April, 1908. Near World's View, Matopos.

Native name : *Igogo*.

68. RAPHICERUS CAMPESTRIS Thun.

♂ ♀. Near Mangwe.

♀. 4 June, 1907. Springvale Farm, near Bulawayo.

♂. 25 Oct., 1907. Mt. Silozi, Matopos.

Native name : *Inqina*.

69. RAPHICERUS SHARPEI Thos.

♂. Aug., 1908. Near Inyati.

♂. Oct., 1908. Sinonombi.

Native names : *Isanempa* and *Isanhlunywana*

70. KOBUS ELLIPSIPRYMNUS Ogilby.

♀. Near Mangwe.

♂. Oct., 1908 (head only). Sinonombi.

Native name : *Isidumuka*.

71. CERVICAPRA ARUNDINUM Bodd.

♂ ♀. 24 Oct., 1907. Mt. Silozi, Matopos.

Native name : *Umzigi*.

72. ÆPYCEROS MELAMPUS Licht.

2 ♂. Oct., 1908. Sinonombi.

Native name : *Impala*.

73. HIPPOTRAGUS EQUINUS Desm.

♂ ♀. Near Mangwe.

Native name : *Itaga*.

74. HIPPOTRAGUS NIGER Harris.

♂ ♀. Near Mangwe.

Native names : *Umtjwajili* and *Inqwalati*.

75. STREPSICEROS STREPSICEROS Pall.

♂ ♀. Near Mangwe.
Native name: *Imbalabala*.

76. TAUROTRAGUS ORYX Pall.

♂ ♀. Aug., 1907. Kana River (skeletons).
Native name: *Impofu*.

77. BUBALUS CAFFER Sparrm.

The Buffalo is found in Northern Matabeleland, and I know of two males being shot there in October 1908.
Native name: *Inyati*.

78. GIRAFFA CAPENSIS Less.

♀. Near Mangwe.
Native name: *Intudhla*.

79. HIPPOPOTAMUS AMPHIBIUS Linn.

There are many hippos still in the country, and some were shot at Belingwe this year.
Native name: *Imvubu*.

80. POTAMOCHÆRUS CHÆROPOTAMUS Ill.

♂. July 1908. Matopos.
Native name: *Ingulugundu*.

81. PHACOCHÆRUS ÆTHIOPICUS Pall.

♂. Oct. 1907. Khami R.
Fairly common all over the country.
Native name: *Ingulubi*.

82. EQUUS BURCHELLI CHAPMANI Layard.

2. Near Mangwe.
Native name: *Idube*.

83. DICEROS BICORNIS Gmel.

♂. Jan., 1907. Gwelo.
Native name: *Umkombo*.

84. PROCAVIA CAPENSIS Pall.

♂ imm. 13 Sept., 1907. Syringa.
♂ ♀. 23 Sept., 1907. Pandangwe Kopjes, Gwanda.
2. 20 Feb., 1908. Between Lochard Siding and Inyati.

♂. 17 April, 1908. Near World's View, Matopos.

♂. 19 April, 1908. Mt. Silozi, Matopos.

One of the skins from between Lochard Siding and Inyati has a large white patch on the top of the head.

Native name : *Imbila*.

85. *PROCAVIA BRUCEI* Gray.

♂. 24 April, 1908. Kahlele's, Matopos.

Trapped in tree by natives.

Native name : *Imbila*.

86. *ELEPHAS AFRICANUS* Blum.

The Elephant is to be found in Northern Matabeleland, and I saw fresh spoor of a herd on the Kana River in November, 1907.

Native names : *Indhlovu* and *Inkubu*.

87. *MANIS TEMMINCKI* Smuts.

♂. 22 April, 1907. Wankies.

Native name : *Inkaka*.

88. *ORYCTEROPUS AFER* Pall.

♂. Aug., 1907. Mapisa's, near Figtree.

♀. 24 Oct., 1908. Shiloh.

Native names : *Isambane* and *Iwombela*.

3. Report on Deaths which occurred in the Zoological Gardens during 1908. By H. G. PLIMMER, F.L.S., F.Z.S., Pathologist to the Society.

[Received February 1, 1909.]

On January 1, 1908, the number of animals in the Zoological Gardens was 3190 and during the year there were 2418 new arrivals, making a total for the year of 5608. 1737 animals have died during the year, that is roughly 31 per cent., but if from this number we subtract 769 animals which did not live for six months after their arrival in the Gardens—that is, those which had not got used to their new environment—the percentage of deaths is reduced to 17 per cent., which is probably a much fairer number to take.

Of those which have died, 1089 have been examined, and in 41 of these no cause of death could be found. Of the remainder 129 died from injuries of various sorts, or were lost, or not sent for examination, and 30 died from exhaustion due probably to depressed vitality from cold or darkness, or from inability to get or to take food.